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- Read and observe the information in this documentation. You will avoid accidents, retain the manufacturer's warranty and possess a fully functional and ready to operate engine.
- This engine is built exclusively for purpose according to the scope of delivery - defined by the equipment manufacturer (use for the intended purpose). Any use above and beyond this is considered improper use. The manufacturer will not be liable for damages resulting from this. The user bears the sole risk.
- Use for the intended purpose also includes observance of the operating, maintenance and repair instructions specified by the manufacturer. The engine may only be used, maintained and repaired by persons who are familiar with this and are aware of the risks involved.
- Make sure that this documentation is available to everyone involved in the operation, maintenance and repair and that they have understood the contents.
- Failure to observe this documentation may lead to malfunctions and engine damage as well as injury to persons for which the manufacturer will not accept any liability.
- Prerequisite for proper maintenance and repair is the availability of all the necessary equipment, conventional and special tools and their perfect condition.
- Engine parts such as springs, clamps, elastic retaining rings etc. pose an increased risk of injury when handled incorrectly.
- The pertinent rules for the prevention of accidents and other generally recognised health and safety regulations must be observed.
- Maximum economy, reliability and long life is only guaranteed when using DEUTZ original parts.
- Repair of the engine must correspond to its use for the intended purpose. Only parts released by the manufacturer for the respective purpose may be used for conversion work. Unauthorised modifications to the engine exclude manufacturer liability for resulting damages. Failure to observe this will void the warranty!
- The engines made by DEUTZ are developed for a wide range of applications. A wide range of variants ensures that the respective special requirements are met.
- The engine is equipped according to the installation case, i.e. not all the parts and components described in this documentation are installed in your engine necessarily.
- We have done our best to highlight the differences so that you can easily find the operating, maintenance and repair instructions relevant to your engine.

We are at your service for any questions you may have in this matter.

Your DEUTZ AG

ID no.	Name	Screw type	Notes / Remark	Value
A00 001	Clamping bracket on crankcase	M10x20-10.9		41 Nm
A00 002	Clamping bracket on adapter for assembly block			90 Nm
A00 003	Mounting foot/engine mounting on crankcase	M10x20-10.9		41 Nm
A01 001	Cylinder head on crankcase	M12x130-10.9	Use new screws. Observe tightening order.	35 Nm + 60° + 60°
A01 002	Rocker arm on cylinder head	M8x30-8.8		27 Nm
A01 004	Cylinder head cover on cylinder head	M8x50-10.9		27 Nm
A01 092	Transport bracket on cylinder head	M8x16		21 Nm
A02 010	Main bearing housing on crankcase	M8x20-8.8	Stage 1:	15 Nm
A02 010	Main bearing housing on crankcase	M8x20-8.8	Stage 2:	27 Nm
A02 012	Bearing housing in crankcase	M10x80-8.8		41 Nm
A02 020	Big end bearing cover on connecting rod	M8x52-10.9	Use new screws.	20 Nm + 45°
A03 020	Gearcase cover on crankcase	M8x35-12.9 M8x50-10.9 M8x70-8.8		27 Nm
A03 030	Lubricating oil pan on crankcase	M8x20-8.8	Observe tightening sequence.	32 Nm
A03 031	Locking screw on lubricating oil pan	M14x14	Use new Cu sealing ring.	39 Nm
A03 060	Oil trap on crankcase	M8x40-8.8		27 Nm
A03 080	Connection housing to crankcase	M12x25-12.9	Locking screw	81 Nm
A04 001	Camshaft gear wheel on camshaft	M12x35-8.8		81 Nm
A04 002	Camshaft, shim on crankshaft	M8x16-8.8	Torx screw	21 Nm
A04 004	Injection pump gear wheel on injection pump		Stage 1:	10 Nm
A04 004	Injection pump gear wheel on injection pump		Stage 2:	81 Nm
A04 011	Intermediate gear on crankcase	M12x75-10.9		81 Nm
A04 022	Cap on gearcase cover	M8x70-8.8 M8x20-8.8	Torx screw	27 Nm
A06 001	Exhaust pipe at cylinder head	M8x55-10.9		27 Nm
A06 010	Exhaust manifold to turbocharger	M8x25-10.9	Insert with Deutz S1 mounting compound.	41 Nm
A06 020	Turbocharger on exhaust pipe	M10x20-10.9 M8x16-8.8	Insert with Deutz S1 mounting compound.	41 Nm
A06 030	Charge air pipe on cylinder head	M8x45-10.9	Observe tightening sequence.	27 Nm
A06 030	Air suction intake pipe on cylinder head	M8x70	Observe tightening sequence.	27 Nm
A06 059	Exhaust return pipe to cooler	M8x12-10.9		25 Nm
A06 062	Exhaust return pipe to charge air pipe	M8x70-8.8		20 Nm
A06 063	Compensator pipe on exhaust pipe	M8x20-10.9		20 Nm
A06 064	Compensator pipe to cooler	M8x12-8.8		25 Nm
A06 070	Exhaust return pipe to exhaust return valve	M8x20-8.8		20 Nm
A06 083	Charge air manifold to charge air pipe	M8x20-8.8		21 Nm
A07 001	Fuel injector on cylinder head	M8x35-10.9	Torx screw	35 Nm
A07 001	Fuel injector on cylinder head	M22		68 Nm

## Checking the compression pressure



Commercial available tools:

– Compression pressure tester..... 8005

Special tools:

– Connector..... 100220



– W 13-06-01

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## Checking the compression pressure

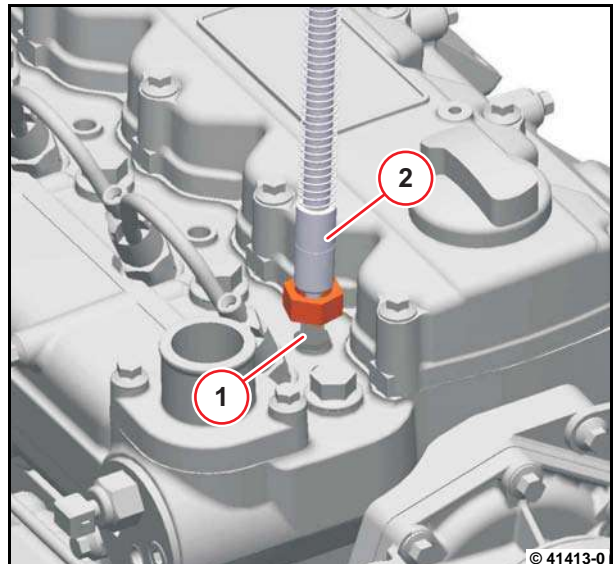
- Disconnect the shutoff solenoid.
- Remove the glow plugs.

 W 13-06-01


- Insert connector (1).
- Tighten the connection piece.

 15 Nm

- Connect adapter (2) to connector.



- Mount the compression tester on the adapter.
- Turn over engine with starter.

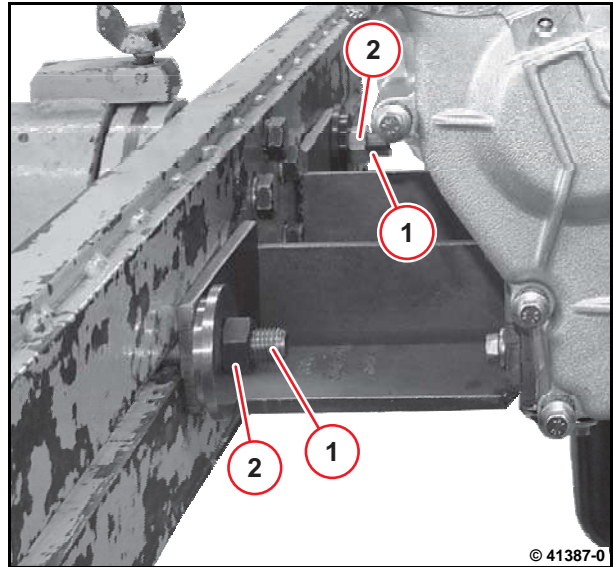
 25 - 30 bar (2500 - 3000 kPa)



- Align engine on engine block.
- Tighten screws (1) and nuts (2).

 90 Nm

- Unhook the engine from the workshop crane.



### Demounting engine from assembly block

- Hang the engine director onto the transport lashes (arrows) with support chain.

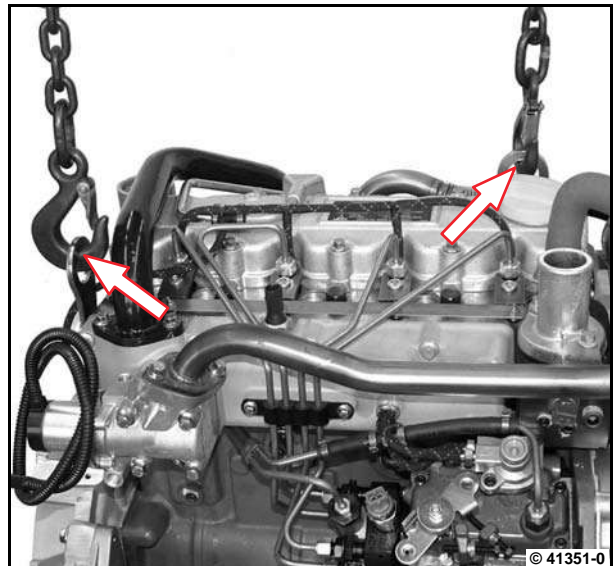
– D / TD 2009 L03

 approx. 180 kg

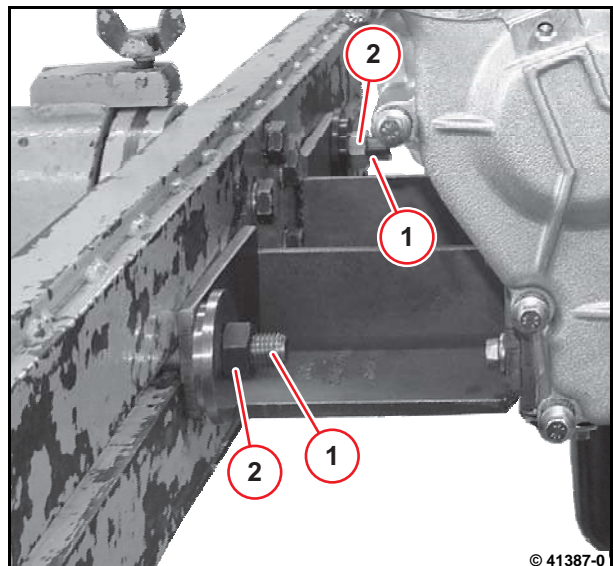
– D / TD 2009 L04

 approx. 220 kg

- Hang engine on workshop crane.

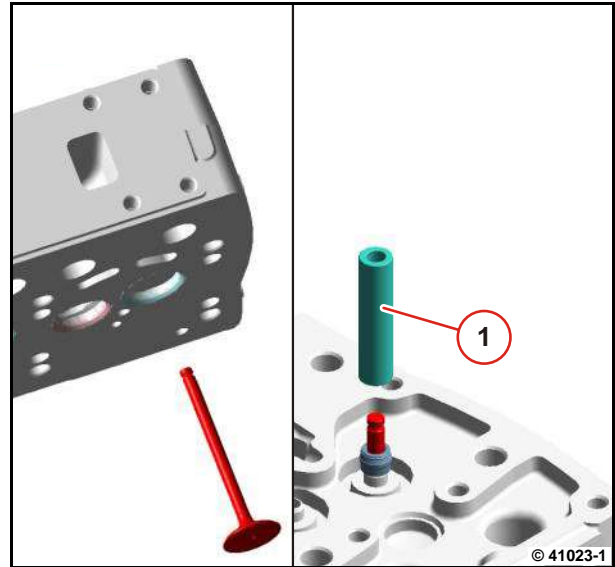


- Unscrew the nuts (2).
- Remove screws (1).

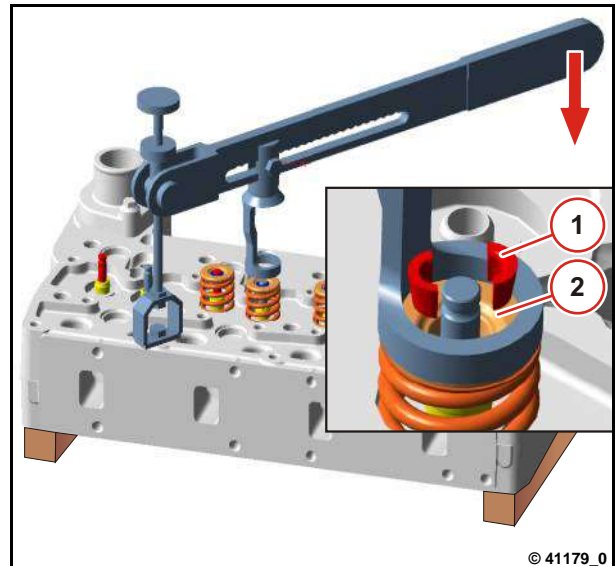


## Installing the valves

- Oil the valve stem lightly.
- Insert and hold valve.
- Mount assembly sleeve.
- Push new valve stem seal onto valve guide over the assembly sleeve with assembly tool (1).



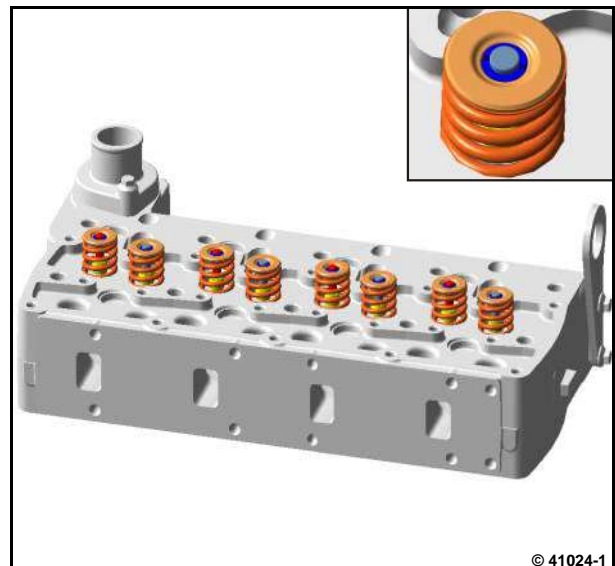
- Mount assembly lever.
- Insert valve spring.
- Insert valve spring plate (2).
- Press down the valve spring with the assembly lever and insert both taper collets (1).



- Remove assembly lever.

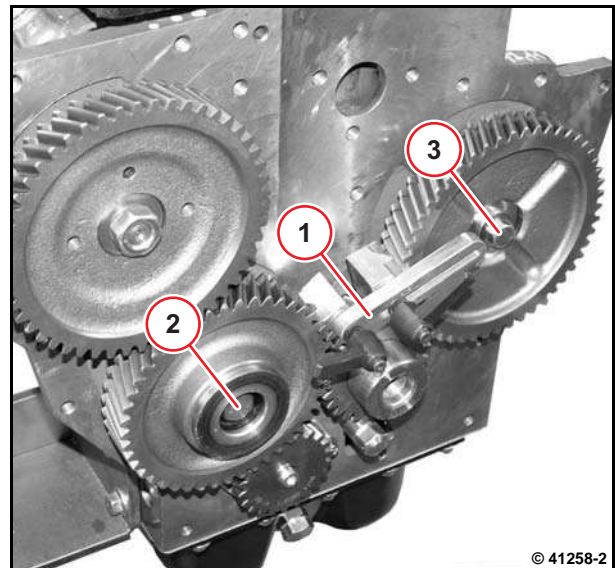


Make sure the taper collets fit correctly in the valve keyway.



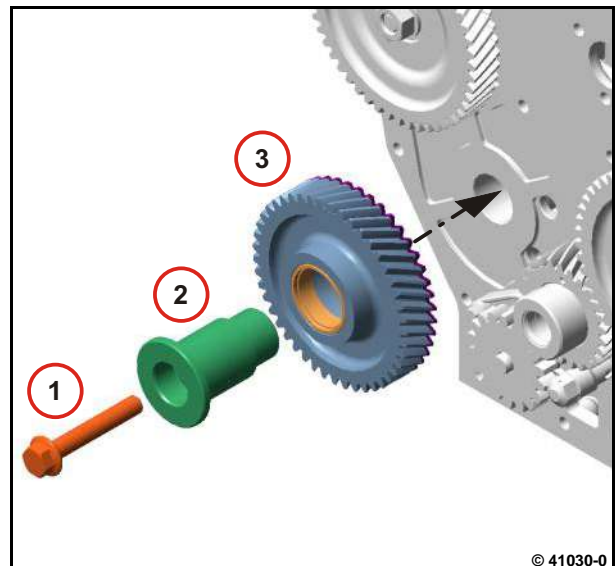


- Mount blocking tool (1).
- Loosen screw (2).
- Loosen screw (3).
- Remove blocking tool (1).



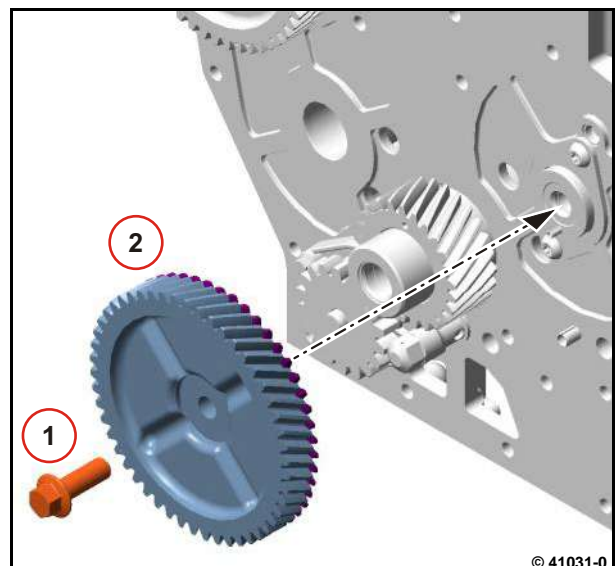
© 41258-2

- Unscrew screw (1).
- Pull out journal (2).
- Remove idler gear (3).



© 41030-0

- Unscrew screw (1).
- Remove camshaft toothed wheel (2).



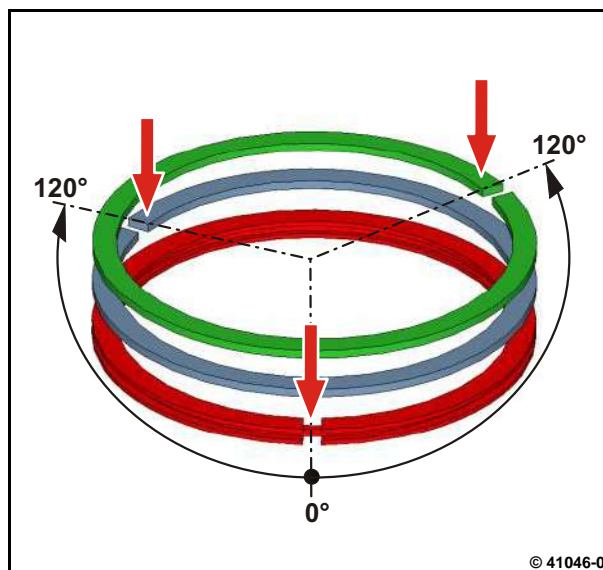
© 41031-0

- Install piston rings with universal piston ring pliers.
- Arrange the piston ring joints with an offset of about 120° to each other.



Do not turn the piston rings any further.

- Lightly oil cylinder running surface, piston, piston rings and lifting bearing journal lightly.
- Clamp piston rings with piston ring compressor.



- Set lifting journal at bottom dead centre (BDC).
- Push piston and con rod completely into cylinder.



**Attention!**

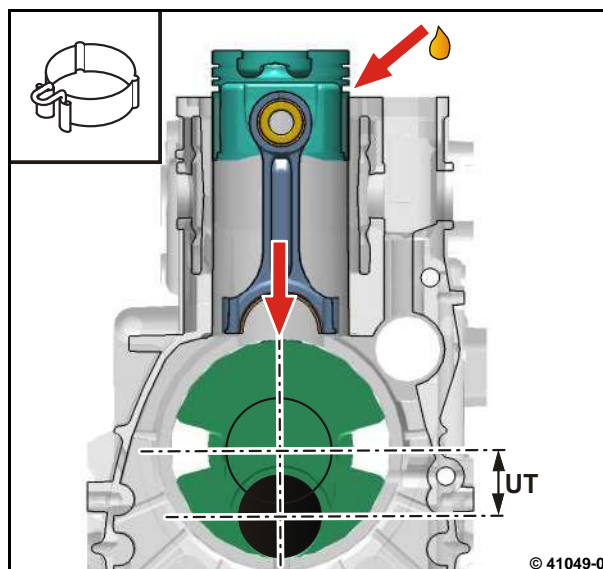
Note installation position.  
Numeric identification faces the camshaft side.

- Place piston ring clamping band flat on the crankcase.
- Push piston and con rod completely into cylinder.



**Attention!**

Do not jam the con rod with the crankshaft.



- Mount big end bearing cap.



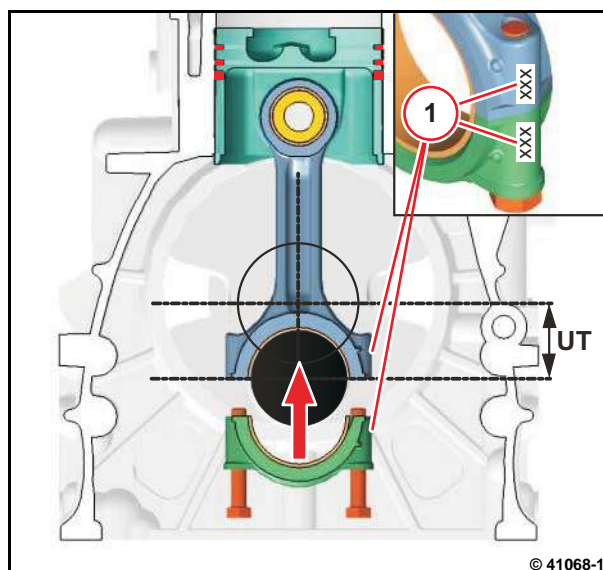
**Attention!**

Renew screws every time they are loosened.  
Note assignment and installation position:  
The identification numbers (1) on the connecting rod and the big end bearing cover must be identical and opposite to each other when assembled.

- Tighten new screws with rotation angle disc.

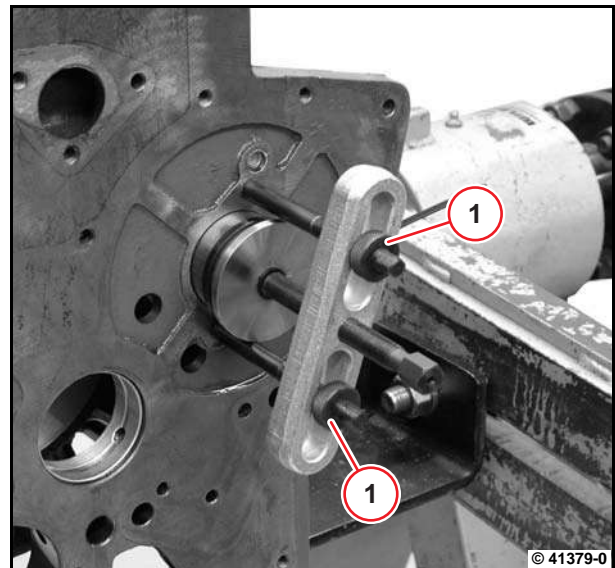


20 Nm + 45°

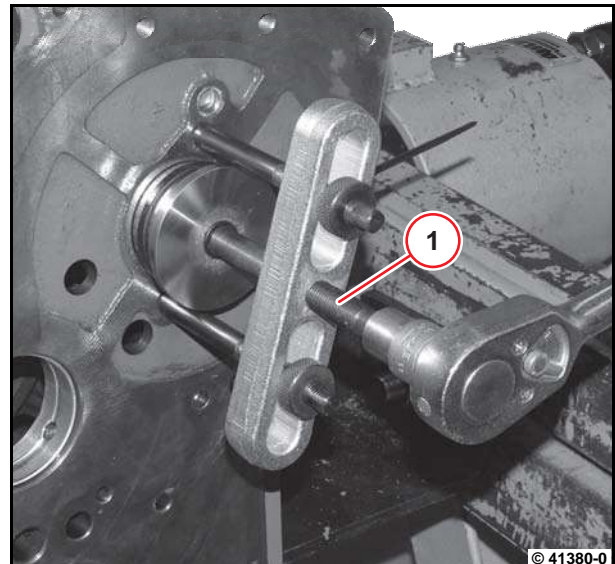




- Tighten knurled nuts (1).

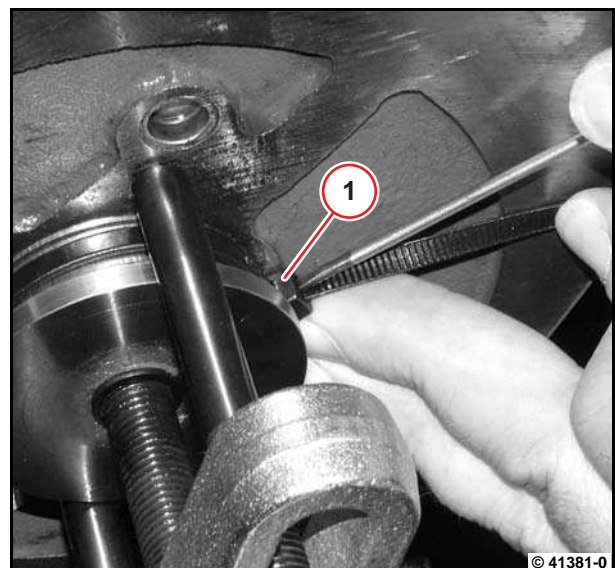


- Tighten screw (1).

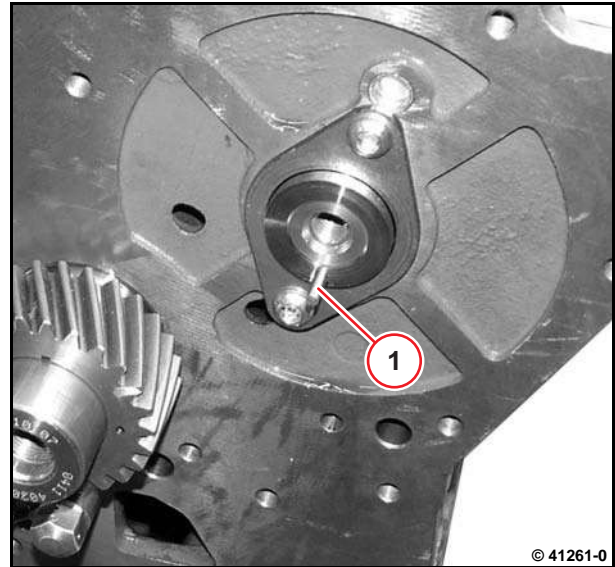


**Attention!**  
Do not damage the bearing shells.

- Remove cable tie (1).

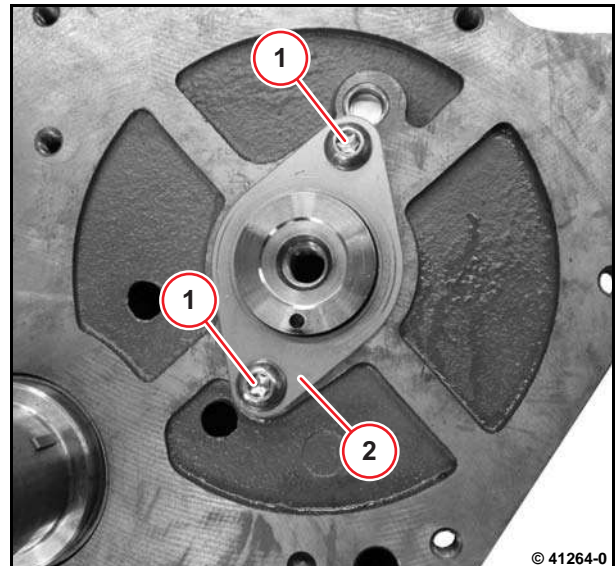


- Remove cylindrical pin (1).

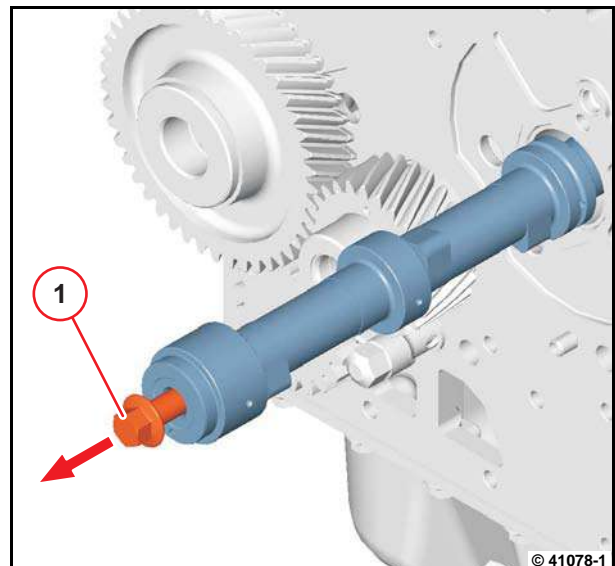


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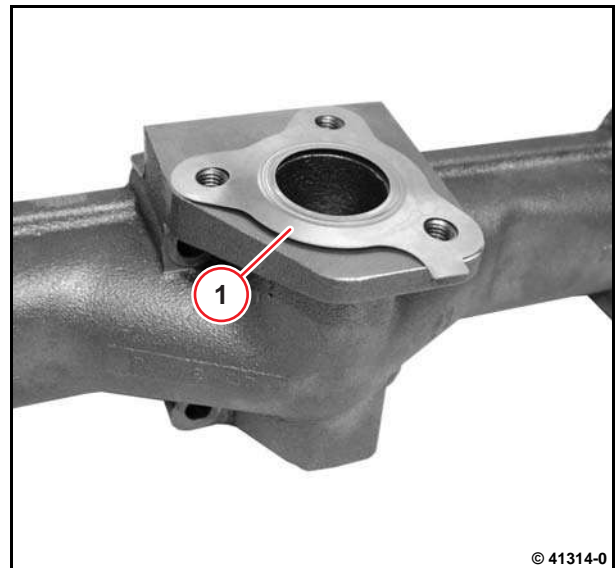
- Unscrew screws (1).
- Remove thrust washer (2).
- Visually inspect the components.



- Fasten screw (1).
- Pull out the camshaft carefully in the direction of the arrow.
- Visually inspect the components.



- Clean sealing surfaces.
  - Mount gasket (1).
- Note installation position.

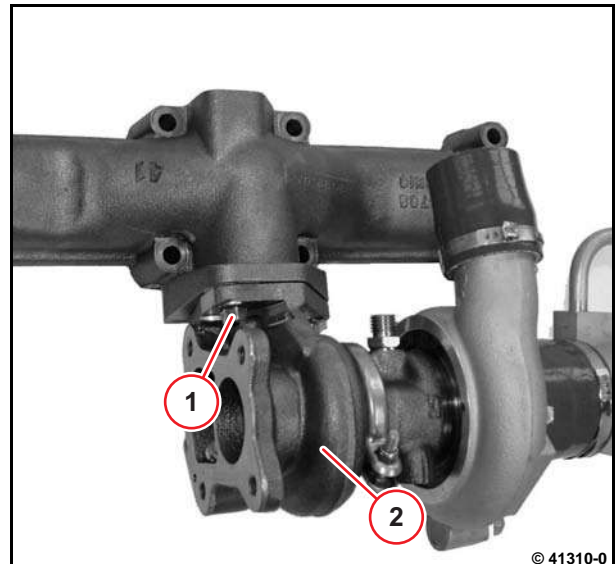


- Mount turbocharger (2).
- Tighten all screws (1).

 41 Nm



Coat screws with DEUTZ S1 mounting compound.



### Installing exhaust manifold

- Clean sealing surfaces.
- Mount gasket (3).
- Mount exhaust manifold (2).
- Tighten screws (1).

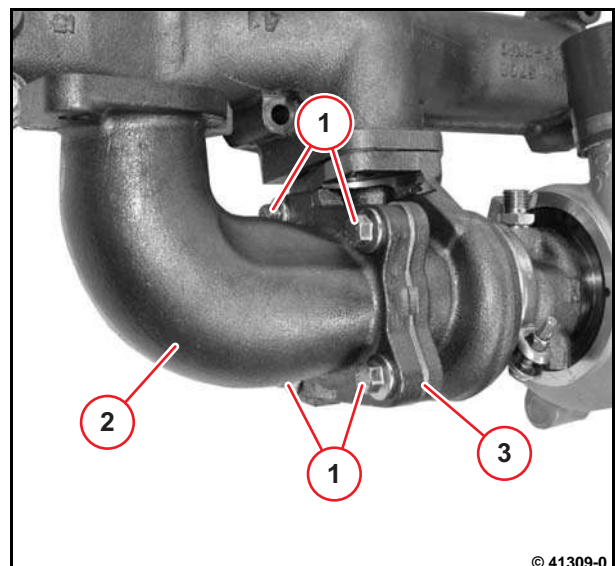
 41 Nm



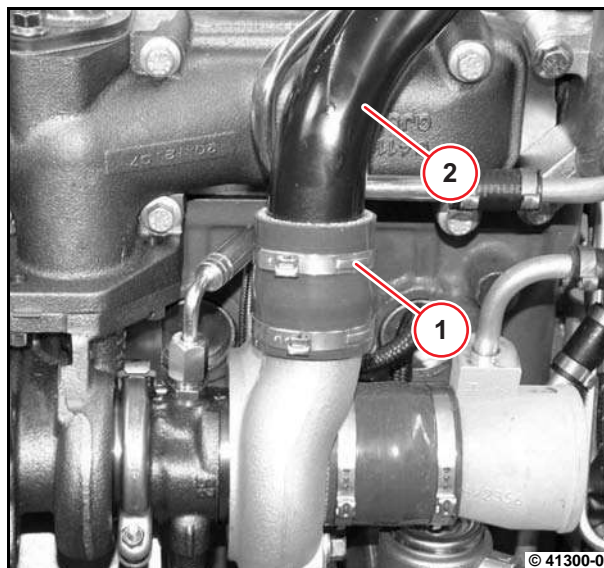
Coat screws with DEUTZ S1 mounting compound.

- Install the exhaust pipe.

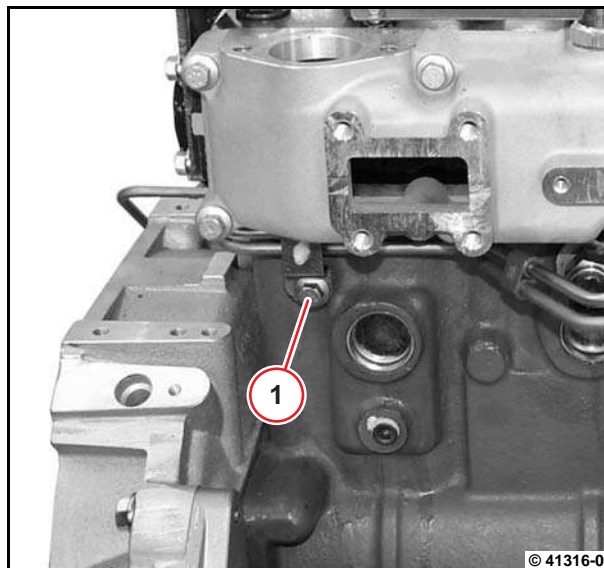
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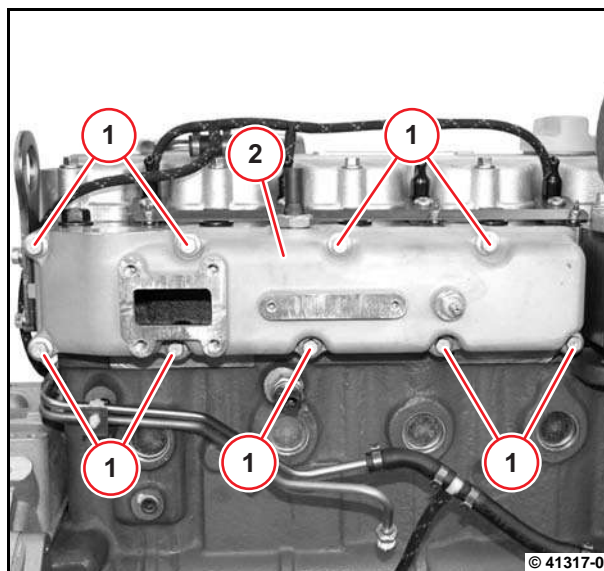
- Loosen hose clip (1).
- Remove charge air pipe (2).



- Unscrew screw (1).

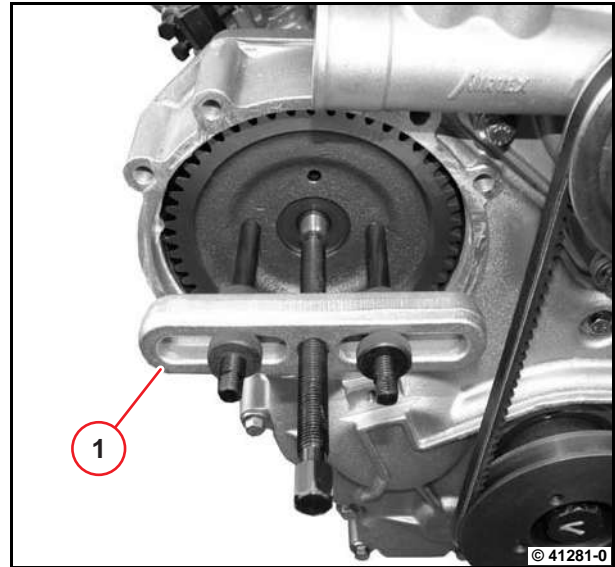


- Unscrew screws (1).
- Remove charge air pipe (2).



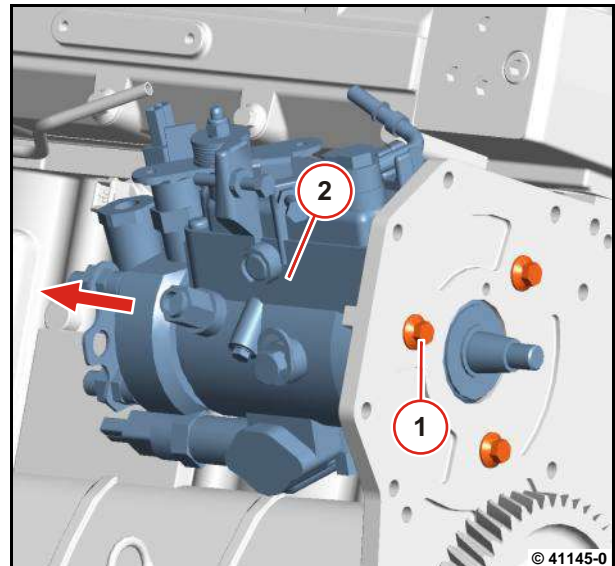


- Mount the extraction tool (1).
- Pull off the fuel injector pump toothed gear with the extraction tool (1).
- Visually inspect the component.

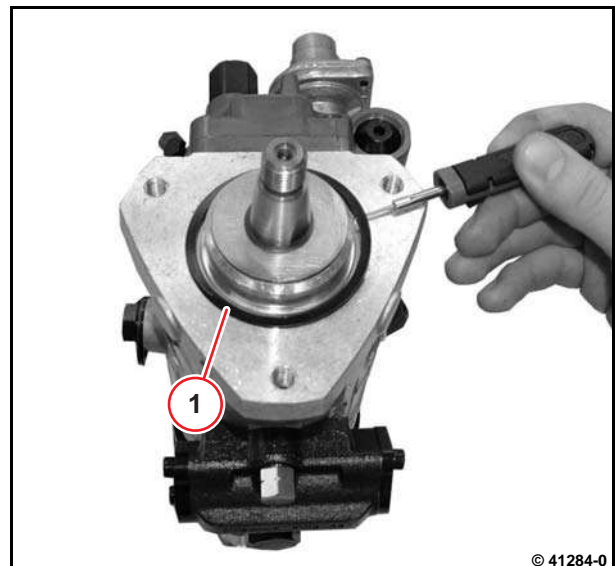


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- Unscrew screws (1).
- Remove fuel injector pump(2).



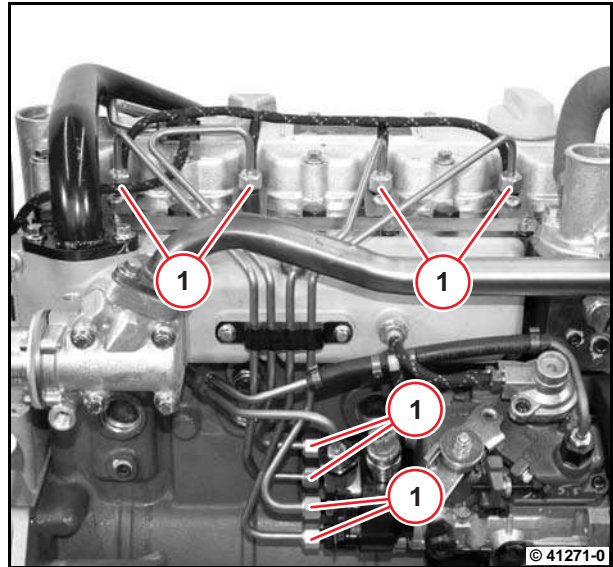
- Remove the O-ring (1) with the disassembly tool.
- Visually inspect the components.





- Tighten union nuts (1) with special wrench.

 28 Nm



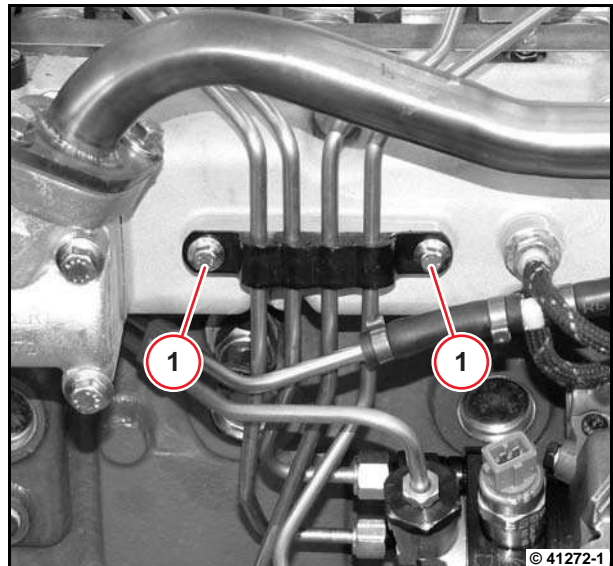
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- Tighten screws (1).

 9 Nm



Ensure that the installation location is free from faults.



## Installing the oil pressure switch

- Clean components.

6



- Tighten the oil pressure switch (1) with the socket wrench insert.

– M10x1

 20 Nm

– M12x1.5 / M14x1.5

 50 Nm

- Connect cable.



Ensure that the connection is perfect.

- Fill in lubricating oil according to operating manual.

